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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • JULY 31, 1943

Simulated Shipwreck

See Page 71

A SCIENCE SERVICE PUBLICATION

Do You Know?

A heavy *bomber,* cruising at 250 miles an hour, burns 3-1/3 gallons of gasoline every minute.

The exportable surplus of *milled rice* from the current Brazilian crop may reach a record total ranging between 225,000,000 and 350,000,000 pounds.

Only the United States and Russia have allowed their *civilians* to fly in wartime; other belligerents grounded their amateurs as soon as war was declared.

The first *paratrooper* is reported to be a French captain who jumped in the spring of 1918, with an assistant and a load of explosives, to blow up German communications behind the lines.

Chilian caliche, a natural ore, is the principal source of sodium nitrate, an essential chemical in fertilizers and war production; this industry gives direct employment in Chile to over 50,000 persons.

It is believed that the *raccoons* living on the islands off the coast of Southern Florida are smaller than those found on the mainland because they have no access to fresh water except during the rains.

To safeguard men and women serving in the tropics, America will produce this year 2,500,000,000 *atabrine* tablets, the synthetic antimalarial and principal substitute for quinine no longer available to us.

Steel leads the list of raw materials supplied Russia, totaling 725,000 tons for the first 19 months of lend-lease.

A self-propelled *trouble-shooting car* with wheels that can be adjusted to fit any gauge railroad track in the world has been designed for the Army.

By reducing household matches 1/16 and 1/4 of an inch, 7,000,000 board feet of *lumber* were saved last year.

The *Boulder Dam* installation has been the first single power plant in history to operate at more than a million kilowatts capacity.

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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MEDICINE

Blast Death Explained

Sudden death during bombings is believed due to jamming shut of the epiglottis, roof of voice box, while the lungs are empty of air.

➤ A NEW explanation for sudden death from blast appears in the *Lancet,* medical journal published in London (June 26).

In these blast deaths, which occur during bombings, the victim is not hit by the bomb or its fragments and the body usually shows no sign of injury or at least of injury bad enough to have killed the victim.

These deaths may be due to forcible jamming shut of the epiglottis while the lungs are empty, in the opinion of Dr. F. C. Eve, senior consulting physician of the Royal Infirmary at Hull and deviser of a rocking method of giving artificial respiration. No other satisfactory explanation of sudden death from blast has yet been given, he states.

The epiglottis is the lid or roof of the voice box. The high pressure wave from the bomb, both in air and water, compresses the chest, forcing out some air, Dr. Eve explains. The chest, being elastic, then expands and air is drawn sharply inward. This inrush of air might slam down the epiglottis and its effect would be reinforced by the low pressure wave of the blast which sucks the chest walls outward just as it sucks glass out of windows.

If the lid of the voice box is jammed shut this way when there is only a little air in the lungs, the victim cannot force it open because he has not enough air in his lungs to provide sufficient pressure. With the epiglottis jammed shut, no air can get into the lungs, either, so the victim swiftly dies.

To answer the objection doctors are sure to make, that in such a case the victim would show signs of suffocation, which blast death victims do not, Dr. Eve cites from the medical literature three cases of sudden death due to food jammed in the upper part of the windpipe. The victims in these cases did not turn blue or show signs of choking.

Cases of death from the epiglottis being jammed shut are probably not so rare as commonly believed, Dr. Eve says. He thinks that both in blast victims and other sudden death victims this cause may often be missed, as it nearly was in a case of electrocution he saw.

His experiences and experiments with fingers cut from rubber gloves and placed over bottles subjected to blast waves lead him to suggest certain methods of treatment and perhaps prevention of blast deaths. For prevention, he advises wearing a broad belly bandage which need not be very tight but must be inelastic.

For treatment, the doctor should try to pull up the jammed epiglottis with his finger or a crochet hook. Or he might plunge a small hollow needle or even a knife into the windpipe, perhaps also blowing into it, so as to get air back into the lungs to force open the epiglottis. After this, but not before, artificial respiration may be used if necessary to restore the victim. The epiglottis-opening procedure, with needle, or finger, must be completed within four minutes, he warns, if the life is to be saved.

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VISUAL AIDS—At the Medical Replacement Training Center, at Camp Pickett, Va., this studio is operated where five enlisted men work constantly at making plastercast models of legs, arms, heads and other parts of the body for the instruction of medical soldiers for the battlefield jobs. Some models show fractures, injuries and wounds of all sorts, and some illustrate the various functions of organs or show pressure points, muscles, veins, and so on.

PSYCHOLOGY-PHYSIOLOGY

"White Noise" in Planes Studied By Scientists

➤ METHODS for solving the problem of "white noise" in airplanes, which is apt to get whiter and therefore worse as faster planes are built, are reported by Comdr. Leon D. Carson, U. S. Navy, Dr. Walter R. Miles, Yale School of Medicine, and Dr. S. S. Stevens of Harvard, to the Federation of American Societies for Experimental Biology.

White noise is to sound what white light is to light, the scientists explain. It is heard when all sound frequencies are added together, just as white light is seen when all colors, or light wave frequencies, are added together. The person on the ground listening to a plane high overhead hears only the low frequencies of the propeller. Inside of a really fast-moving plane, all the frequencies are heard together. Usually, the greater the speed, the whiter the noise and the more objectionable it is to the ear. (*Please turn page.*)

White noise is not only disagreeable but produces temporary deafness and spoils communications. Three remedies are suggested by the scientists.

First, the noise in a plane can be made less white by improved aeronautical design or by application of sound absorbent materials.

Second, communications can be improved even in the midst of white noise by use of high-fidelity microphones and earphones, equipment which the scientists state is not yet being widely used in airplanes though a few major improvements are in process.

Third, the microphone and earphones should be shielded from the noise by acoustic devices. Oxygen masks could be designed to include a microphone shield to cut out some of the white noise racket, and the ear can be shielded by an acoustic socket designed to provide a tight seal against the head.

Science News Letter, July 31, 1943

METALLURGY

Powder Hard as Diamond

Super-tool material, product of powder metallurgy, is considered important factor in speeding up production of ordnance and munitions.

➤ A POWDER product practically as hard as a diamond is a significant factor in speeding up our production of ordnance and munitions, Prof. Gregory J. Comstock of the Stevens Institute of Technology pointed out in Science Service's Adventures in Science program over the Columbia Broadcasting System.

It has been estimated that without this super-tool material, the Axis would have required at least a year longer to complete their preliminary preparations for aggression, Prof. Comstock, the world's first and only professor of powder metallurgy said of the hard cemented carbide-tool material, a product of powder metallurgy.

Metal powder friction materials, Prof. Comstock stated, have been developed which have made it safe to operate clutches and brakes without charring at a much higher temperature than previously thought possible.

Porous metal powder bearings are in fact metal sponges which permit oil to go through the bearings like the wick in an oil lamp. In this way the oiling of inaccessible bearings has been materially simplified.

"When it was demonstrated that an article which had previously been manufactured by the normal established practice could be molded from metal powder for less money, and in many cases, at a higher production rate, industry became keenly aware of powder metallurgy," Prof. Comstock remarked concerning the present general interest in applied powder metallurgy.

Science News Letter, July 31, 1943

PHYSIOLOGY

Gray Hair Vitamin Tested

Chances of restoring color to grayed locks are demonstrated to be small in new test with nineteen elderly men and women. Turns some hair green.

➤ HOPE THAT taking vitamins will restore gray hair to its natural color is considerably lessened by the latest report from scientists studying the problem.

In only two out of 19 gray-haired elderly men and women did a significant change of hair color occur with intensive vitamin treatment over a period of eight consecutive months, Dr. Harold Brandaleone, Dr. Elizabeth Main and Dr. J. Murray Steele, of New York University, report to the society for Experimental Biology and Medicine.

The change became apparent after two or three months and tended toward a return to the original color. After three months, the change increased slowly in intensity until the drugs were stopped.

The most common change in the 17 other patients was the appearance of a yellow or greenish cast to the gray hair. Growth of scattered, wiry black hairs also became apparent. In several patients there was thought to be a greater luster without change in color, and one man whose hair was sparse had an increase in the number of hairs.

The two men whose hair color changed without any doubt were among seven given daily doses of two B vitamins, calcium pantothenate, para-aminobenzoic acid and brewer's yeast. Others in the study were given one or the other vitamin plus the yeast.

Both these vitamins which are found in yeast with the other B vitamins have been reported as effective in curing gray hair in both human beings and animals. The wide publicity given some of these reports, the New York investigators state, "made it seem desirable to plan studies of rather long duration in order to quantitate more carefully the degree of change to be expected after use of pantothenic acid and para-aminobenzoic acid."

For judging change in hair color, three methods were used: (1) photographs were taken before, during and after treatment; (2) samples of hair were clipped from a given area at the time the photos were taken; (3) all patients were seen by the same two observers at least twice a month and notes taken of any observed change.

"Subjective opinions were more accurate than photos and less discouraging than hair samples," the scientists state, pointing out that a very definite color change must occur before it is apparent in the hair clippings.

The three researchers are making a similar study on younger persons. The 19 reported on were patients in the Goldwater Memorial Hospital with chronic diseases such as rheumatoid arthritis, general hardening of the arteries and Parkinsonism.

Science News Letter, July 31, 1943

CHEMISTRY

Crude Oil from Pine Stumps Is Chinese Development

➤ A PROCESS for extracting crude oil and a gasoline substitute from pine tree stumps has been perfected by a young chemistry instructor of Fukien Christian University in China.

This new process is a military secret for the present but the Chinese Army is already using the gasoline substitute obtained from the hundreds of thousands of tree stumps left as a result of timber exportation from the Fukien Province's forests.

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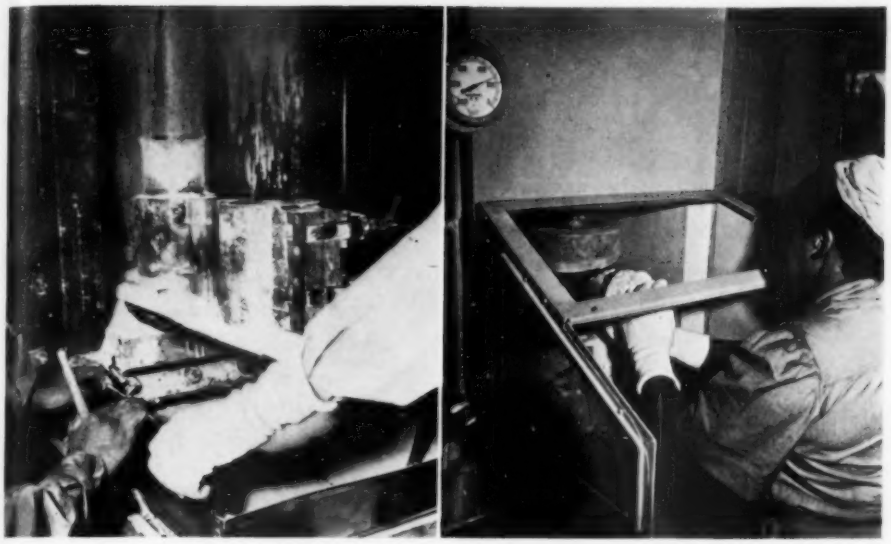

SAFETY AT ARSENAL—The photograph at the left shows the old process for filling smoke pots that produce the dense, opaque white smoke used to screen battlefield operations. The dust forced up when the pots were tamped down constituted an explosion hazard. On the right is the new dust-abating apparatus for doing the same job. The skirt around the plunger prevents the upward swirl of dust, and a ventilating system draws other dust off where it can do no harm. The pictures are from Edgewood Arsenal.

SAFETY ENGINEERING

Accidents at Minimum

Despite the deadly stuffs handled at Chemical Warfare's Edgewood Arsenal, the Army Industrial Hygiene Laboratory keeps mishaps down.

➤ WORKING at the Edgewood Arsenal, manufacturing and testing center of the Army's Chemical Warfare Service, would seem to rate classification as an ultra-hazardous occupation. Here men and women daily handle such deadly stuffs as lewisite, phosgene, chlorine, phosphorus, the mustard gases, in multi-carload lots, in addition to the normal risks always to be found in the neighborhood of high-powered machinery and motor transport.

Yet on the actual record this great factory of death and destruction takes very small toll of its employes; less, in fact, than the over-all average for American industry as a whole. Last month there were only 24 injuries causing loss of time, among the 9,000 persons on the civilian payroll. Total working days lost amounted to only 121; and the most severely injured case, a woman employe, is already back on the job.

The Arsenal, of course, has an excellently equipped infirmary, with medical staff and nurses, so that injuries can be attended to promptly. But most of the cases they might treat never get there: there is another organization, the Industrial Safety Division, that is constantly engaged in a beneficent conspiracy to keep the infirmary empty and its staff idle. They watch for every possible source of leakage or breakage that would let loose the toxic and incendiary materials on friend instead of foe, and head them off before they happen. They determine where protective devices like masks or respirators are necessary, and see to it that they are properly used.

As an example: The Army uses considerable numbers of 12-pound smoke-pots. Two or three of these cans, within a few seconds after they are ignited, spread an opaque curtain of fog several hundred yards in length and lasting from five to eight minutes—best kind of cover for advancing troops.

These smoke-pots are big sheet-metal cans holding a white powder, compounded of zinc oxide, aluminum dust and hexachlorethane. This has to be packed in very tightly, so that it will burn at the proper rate; a high-pressure hydraulic press is used.

At first, this stirred up no end of dust every time it plunged into the open end of a canister. This dust was not particularly toxic, but of course it was unpleasant to work and breathe in, and there was constant danger of a dust explosion. The particles were extremely small (only one-fourth the diameter of a blood corpuscle on the average), so that they would be very slow about settling out of the air on their own accord.

The safety officers cleaned up the situation quickly and neatly. They put the packing machinery under a hood, with a powerful suction ventilator to pull out the dust and douse it with water to keep it down. They placed a kind of short petticoat around the head of the ramming piston, to stop the first up-puff. Now, the plump and pleasant-faced Negress who operates the press doesn't get even a suspicion of the wrong kind of powder on her nose. And there is no question of having to wear a respirator.

Safeguarding the health of the workers at Edgewood Arsenal is only a small fraction of the job of the Army's industrial safety officers, who comprise both engineers and public health workers. There are something over 500 Army-operated industrial plants, with nearly three-quarters of a million workers at present, with an increase to about 845,000 expected by September. A large proportion of these are women, and the percentage will increase from now on. All these people, in all these plants, are given the same kind of safeguarding that the workers at Edgewood enjoy.

Headquarters in Baltimore

This work is headed up in the Army Industrial Hygiene Laboratory, located in the building of the Johns Hopkins School of Public Health and Hygiene in Baltimore. The laboratory is under the direction of Lt. Col. Raymond G. Hussey. From this center field workers go out to survey plants all over the country, carrying with them portable instruments for measuring whatever may be wrong with air, water, or any other vital element. To this place they return with samples for more detailed analysis, and for the calibration of their field equipment. (*Please turn page*)

Tens of thousands of workers will doubtless accomplish their war-production tasks and at the end go home to the works of peace, little suspecting how they were protected from becoming home-front casualties by the unobtrusive work of a few quiet men.

Science News Letter, July 31, 1943

RADIO

Marconi Award Given

East St. Louis and Johnstown, Pa., boys tie for scholarship carrying two years free tuition at School of Radio and Communication Engineering.

➤ FINDING it impossible to decide between the two top-ranking contestants in a nation-wide competition for the annual Marconi Memorial Scholarships offered by the Veteran Wireless Operators Association, a tie was declared by the judges. As a result, two high school graduates, Frederic Corbin Leiner of 3011 Forest Place, East St. Louis, Ill., and Francis Herbert Horne of 1261 Almire, Johnstown, Pa., will receive two years of free tuition at the RCA Institutes' School of Radio and Communication Engineering.

The Marconi Scholarships were set up by the VWOA as a living memorial to the inventor of radio. The contest is open to all boys and girls who are high school graduates and are members of Science Clubs of America or the American Institute Science and Engineering Clubs.

Both of the award winners are amateur radio operators—a purely coincidental finding. Leiner, the East St. Louis lad, first became interested in radio through association with a local amateur radio operator. He has built both transmitters and receivers. Using old parts, he built a short wave receiver with which he has copied messages from every continent and more than 60 countries. He also helped form the radio club at East St. Louis High School under sponsorship of J. W. Galbreath, teacher. Leiner's ambition is to become a naval radio engineer.

Although only 17 years of age, Francis H. Horne, the other winner, already knows how to fly, has his own primary training glider, was awarded honorary membership in the Pennsylvania Academy of Science for his science activities in Johnstown High School and also received the Bausch and Lomb science award on graduation. He was president of the science club sponsored by his teacher, Miss Sophia M. Moiles, who last year placed two winners in the national Science Talent Search. Horne is working as an inspector for the U. S. Signal Corps at the American Jewels Corporation, Attleboro, Mass.

Runner up in this contest is Lothar Shnitkin, a German refugee, in this country only five years. A graduate of Brooklyn Technical High School, he receives a special award, a one year complete course in television radio engineering at the Midland Radio Schools, Kansas City, Mo. This school has no civilian classes at present so the award will be held in abeyance for the duration. Meanwhile a home study course will be provided. Shnitkin's high school record is something of which anyone would be proud; nothing less than 100% in his regent's examinations in trigonometry, plane and solid geometry. His science club sponsor was Simon A. Weissman.

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PUBLIC HEALTH

Infantile Paralysis Cases Continue to Increase

➤ THE INCREASE in cases of infantile paralysis in the Southwest continues, latest reports from state health officers to the U. S. Public Health Service show. For the week ending July 17, the total for the nation was 297. For the previous week it was 244.

In Texas cases increased from 90 the week of July 10, to 102 the week of July 17. In California the increase was from 75 to 90. Arkansas reported an increase from three to seven cases and Oklahoma 39, the latter being a decrease from the previous week's figure of 44. Only other increases were: Kansas, from five to seven and New York State, from five to 11.

An outbreak of a mild type of influenza was reported by the health officer of Honolulu, where between June 16 and July 10 there have been 4,177 cases. Health authorities recall that two years ago an influenza outbreak started on the Pacific Coast two or three weeks after one in Honolulu in October. Whether this current Honolulu outbreak will spread to the mainland, of course, cannot be predicted.

The total urban death rate as reported at the Census Bureau was, during the week of July 10, below the three-year average for the first time this year.

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PUBLIC HEALTH

Rules Given to Prevent Infantile Paralysis Spread

➤ THIS IS the season when infantile paralysis epidemics are most likely to occur. There is no sure way of preventing this disease as yet, but if there are cases in your community, certain things can be done which might limit its spread. These, Dr. Philip M. Stimson, of Cornell University Medical College, reports (*Journal, American Medical Association,* July 10) are:

Avoid using any water that is possibly contaminated with sewage for either drinking, swimming or washing utensils. Doctors know that sewage can carry the infantile paralysis germs considerable distances and for an appreciable time.

Avoid exhaustion from exertion or chilling. Overexertion and chilling during the incubation period tend to make the oncoming sickness worse.

Avoid injury to the lining membranes of nose and throat, such as that resulting from a tonsil operation. Exposure to infantile paralysis soon after tonsil removal is likely to result in a severe, even fatal attack.

Treat every minor illness as a possible case of infantile paralysis, particularly if there is fever, headache and some spasm of the neck, spine and hamstrings. Very mild cases without definite paralysis are much more numerous than the cases with paralysis. Patients suspected of having this disease should be kept in bed quietly for several days and not allowed up until a competent physician or health authority says that they are well.

Try to keep home and workplaces and their surroundings in good sanitary condition and particularly destroy flies and their breeding places. Flies can carry the infantile paralysis germ, though it has not yet been proved that they can carry enough to make people sick with the disease.

"Avoid unnecessary physical contacts with other people, wash hands carefully before eating, and don't put unclean objects in the mouth," warns Dr. Stimson. "We know that many healthy people carry the virus in their intestines and that for some cases, perhaps most, the port of entry of the infection is the mouth.

"Don't prescribe or take drugs or chemicals that are intended to protect against the disease. As yet we know of none that will do this."

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HERPETOLOGY

Cobras Don't Spit

They squirt their venom through fang cavities modified so that the thin jet is thrown straight ahead. Hits can be scored at six to twelve feet.

➤ SPITTING COBRAS do not really spit their venom, in their peculiar brand of chemical warfare; they squirt it through fang cavities modified in such a way that the thin jet of deadly stuff is thrown straight forward. This has been demonstrated in studies by Charles M. Bogert at the American Museum of Natural History.

Only a few species of cobras are "spitters." The fang cavity of the non-spitting kind runs straight down through the fang, to an opening just outside the tip and slightly above it. This is orthodox snake-fang structure; it functions like a hypodermic needle. A stream of liquid forced through is projected in the direction the fang itself is pointing.

In the fang of a spitting cobra, however, the channel takes a sudden turn as it reaches the discharge orifice, so that a forcibly ejected stream comes out at an angle of approximately 45 degrees to the front surface of the fang. The snake is thereby enabled to hold its fangs in normal position as it menaces its enemy or prey, and yet throw the venom-jet straight forward.

The eyes seem to be the invariable target, in encounters with spitting cobras, and hits can be scored at ranges variously reported to be as much as six to 12 feet. In human beings, venom produces immediate blindness, followed by severe pain and inflammation lasting several hours. There seems to be no permanent injury.

Mr. Bogert suggests that in addition to its defensive function against such enemies as man and mongoose, the spitting habit may aid in the capture of prey. Dr. David Macht, Baltimore toxicologist, has informed him that the venom can be absorbed through the eyes of smaller animals, producing symptoms of general poisoning.

"Spitter" snakes are to be found in the tropics of both Asia and Africa. Despite their individually dangerous character, they do not constitute a really serious menace to the lives of our soldiers on overseas duty because they are not numerous, and most of them avoid trouble as much as possible. However, it is never wise to bend over a snake you think you have killed; some species have a wicked trick of "playing possum," and suddenly getting in one last lick at their attackers.

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PRODUCTION "V"—The "V" for victory formed by the highlights of the electric arc welder is symbolic of the work achieved by the home front worker. One production bottleneck is shown being broken at the Lincoln Electric Welding Company.

ENGINEERING

Simulated Shipwreck Tests Life Rafts and Equipment

See Front Cover

➤ NINE YOUNG MEN deliberately set themselves adrift in the Gulf of Mexico to test the life rafts and equipment which must serve as the sole protection of other men against the elements in similar expeditions, taken by necessity.

For six days and nights, under varying weather and seas the men drifted, using tarpaulins for sails when the wind favored them, for protection from the sun when it was blisteringly hot, and for covering when the chill of night descended.

The test was under the control of the U. S. Army Air Forces School of Applied Tactics at Orlando, Florida. Among the men making the tests were Capt. George H. Waltz, Maj. M. W. Boynton, Corp. Gilbert Bowman, Sergt. Thomas Chancey and Corp. Aubrey Nelson. They are pictured in an official photograph on the front cover of this week's SCIENCE NEWS LETTER.

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NUTRITION

Workers on Odd Shifts Do Not Get Proper Food

➤ HALF to three-fourths of the workers on swing or graveyard shifts fail to get proper food. This is the report of Mrs. Gladys Engel-Frisch to the National Research Council's Committee on Food Habits (*American Sociological Review*, August). And this "odd shift" worker, she says, is the typical worker of today.

The reason for the poor food habits of these two shifts, the 3 p.m. to 12 and the 12 to 6:30 a.m., is in the attempt of the workers to retain their familiar daily routine of living. Lack of proper facilities for food and recreation during these hours destroys this possibility.

Remedies suggested by Mrs. Engel-Frisch are: education in nutrition for boarding-house keepers and heads of families, adequate cafeteria service at all hours, sale of well-balanced lunches, extension of lunch periods from the usual 15 minutes to 30, housing of workers on odd shifts away from those on the day shift, and cooperation between agencies interested in recreation and food habits. The net result would be better health for the worker and increased production.

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MEDICINE

Tannic Acid Out for OCD Burn Treatment

➤ FIRST AIDERS take note: The Office of Civilian Defense has just issued important new recommendations for the first aid treatment of burns and wounds. The American Red Cross, it is understood, will probably issue similar new directions on burn treatment.

For burns, the advice is to use sterile boric acid ointment or petrolatum (sterile vaseline), instead of the previously recommended tannic acid jellies and ointments. This follows recommendations of the division of medical sciences of the National Research Council for the armed forces. The most serious objection to tannic acid is that it almost immediately forms a scab or hard coating over a deep burn. This seals in the germs, dirt and other contamination which usually get into serious burns. Infection may result.

For wounds, the new recommendations advise more cautious use of the sulfa drugs in civilian casualties. Civilian injured, it is pointed out, are likely to include persons of all ages and states of health, whereas the military wounded are in a select group of healthy young men. The danger of poisonous effects from sulfa drug treatment is therefore greater among the civilian injured.

First aiders are further cautioned against the use of sulfa drugs for civilian wounded with the reminder that, unlike the war wounded, the civilians can usually be under treatment in a hospital within a short time. Once in the hospital, the sulfa drugs can be used under medical supervision with proper precautions.

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PSYCHOLOGY

"Tracer Cutback" Is Due To an Optical Illusion

➤ "TRACER CUTBACK," which plagues inexperienced gunners and may seriously reduce the accuracy of fire, is probably chiefly due to optical illusion of movement, Dr. C. H. Graham, of Brown University, reports to the Federation of American Societies for Experimental Biology.

"When an antiaircraft machine gunner fires at a moving airplane," Dr. Graham explains, "his tracer stream seems to bend more and more as it gets closer and closer to the plane. In effect, it develops a 'shoulder' away from the plane or a 'hook' toward the plane.

"There is some physical basis for this marked effect, since it can be shown that the apparent tracer stream lies along a slight curve. However, the curved appearance is greatly exaggerated and cannot be accounted for on a strictly physical basis. It is probable that movement effects provide the illusory accentuation of path curvature."

Dr. Graham gave examples of illusion of motion more familiar to most civilians, such as motion pictures and certain types of "animated" signs. If light from one bulb in the sign goes on and off rapidly and is followed within a short period of time by light in another, the observer sees movement from the first bulb to the second.

"We have no special sense for perceiving speed and distance," Dr. Graham stated. "Instead we must use our eyes and muscles in an appropriate way and learn to put together the messages which result from this behavior.

"This skill is unconsciously developed in different degrees by different individuals. It is so specific that a person who is good at following a moving target may be poor at estimating the speed of his own vehicle."

Science News Letter, July 31, 1943

IN SCIEN

BOTANY

Look for Wild Flower in London's Bomb-Scarred Soil

➤ BOTANISTS in London are watching areas of bomb-scarred and fire-scorched soil in the city, to see if perchance the famous London rocket, a two-foot plant with whitish, four-petaled flowers, may make its first appearance in something over 270 years. This wild plant sprang up abundantly in the ruins after the Great Fire of 1666, which devastated the city when it was much smaller than it is now. (*Britain*, July).

Expectations that it may reappear are based on the fact that already nearly 100 species of plants strange to the city have sprung up in bombed and burned areas, where the chemical properties of the soil have been changed in ways that permit them to grow.

Science News Letter, July 31, 1943

RESOURCES

Food Scarcity Problem May Be Solved By Dams

➤ MORE FOOD and cheaper products of electrochemistry would be the twin results of an expanded irrigation system, Dr. Colin G. Fink of Columbia University pointed out in predicting continued growth of the electrochemical industry after the war.

The industry has already increased tenfold during the past three years. A continued upward trend is foreseen through peacetime demand for many war-borne products and for the new products and processes to come.

Pointing out that thousands of acres in the Midwest are barren due to insufficient rain, Dr. Fink urged that they be rescued by irrigation to meet the increasingly urgent need for more grain and more livestock.

"More irrigation means more hydropower and more hydropower means cheaper electrochemical products," Dr. Fink explained.

Huge dams built during recent years have put vast blocks of power on the market which have been completely absorbed by the electrochemical industry. Today there is a persistent clamor for more and more power.

Science News Letter, July 31, 1943

E FIELDS

AGRICULTURE

New Potato Variety Launched By Government

➤ A FINE new potato variety named Mohawk has just made its bow to the public under the auspices of the U. S. Department of Agriculture. Seed stock for professional growers will be available by next spring, and consumers should be able to find them in the market when the 1945 new-potato crop comes in.

The Mohawk is described as long and smooth, without deep eyes, and excellent for baking. From the grower's angle, it presents the advantages of having good resistance to a number of troublesome diseases, and of producing high yields of uniformly sized and shaped tubers.

The new variety was originated in Maine in 1935, as a cross between two already highly valued varieties, Green Mountain and Katahdin. For the past eight years it has remained under the near-anonymity of the designation "U.S. D.A. Seedling No. 46,000," while necessary test growings were being conducted.

Science News Letter, July 31, 1943

GENERAL SCIENCE

Deferred College Students Get 24 Months for Training

➤ COLLEGE STUDENTS, deferred for professional training, now have 24 months after they are called in the draft in which to complete training, under a new ruling of the Selective Service System.

In a telegram to all State Directors, Maj. Gen. Lewis B. Hershey announced this new two-year training period as a substitute for the specific date of July 1, 1945.

Pre-professional students affected by the ruling include those in the fields of medicine, dentistry, veterinary medicine, osteopathy and theology.

Students of forestry, pharmacy, optometry and agricultural science, formerly given only limited deferments, are now to be included in this 24-month policy. Institutions of this type are not to admit a freshman class of more than 150% of their average number of graduates for the years of 1939-40, 1940-41, 1941-42.

Agricultural engineering students are a new group to be considered by draft boards for deferment, but there will no longer be deferments for heating, ventilating, refrigerating, air conditioning, safety and transportation engineers.

The American Council on Education emphasizes that there is a definite war need for students in these all-important fields but that professional institutions should make a special effort to obtain women or physically disqualified males.

Science News Letter, July 31, 1943

OCEANOGRAPHY

Nature Kind to Our Troops Landing on Sicilian Coast

➤ ALLIED TROOPS swarming ashore on Sicily's beaches had "Eisenhower luck" in not encountering a peculiar local sea-level disturbance that might have caused trouble. Although the Mediterranean is a virtually tideless sea, there is a curious up-and-down fluctuation, known as the "marrobia," that occurs along Sicily's south and west shores at irregular intervals. Without warning, the sea may rise or fall as much as three feet, within one or two minutes. This may stop with one occurrence, or it may keep it up every few minutes for a whole day. The cause is unknown.

Obviously, such a disturbance might have made trouble had it occurred while the first landings were taking place. Now that our forces have secured several good harbors, it makes less difference if the marrobia occurs.

Science News Letter, July 31, 1943

ENTOMOLOGY

Insect Foes Increase In Many U. S. Areas

➤ AN INCREASE in the number of insect pests and in damage done by them is revealed in reports from many states to the U. S. Department of Agriculture. No state is ever left untouched by these pests. But the reports show that central Kansas is hard hit by Hessian flies.

Bean leaf beetles have caused unusual damage in territories covering Maryland, south to Georgia and west to Missouri.

The bronzed birch borer is destroying from 10% to 60% of the mature yellow birch in northern and eastern Maine.

These reports are a reminder that world conflict shouldn't make us weaken defenses against these six-legged fifth columnists. As yet we have not discovered any completely successful means of controlling these adaptable pests, who destroy much of our needed food supply.

Science News Letter, July 31, 1943

ASTRONOMY

Amateur or Layman Eligible For New Astronomy Medal

➤ A MEDAL has just been established for an amateur astronomer or layman performing an outstanding service to the cause of astronomy. This award is believed to be the first of its kind established in this country by a purely amateur astronomical society.

The Amateur Astronomers Medal was established by the Amateur Astronomers Association of New York City, with headquarters at the Hayden Planetarium of the American Museum of Natural History. To be given from time to time to an amateur astronomer or layman anywhere in the world, it was established to help bridge the gap between the professional astronomer and the layman, and also to commemorate the quadricentennial of the death of Copernicus.

Science News Letter, July 31, 1943

MEDICINE

Twentieth Case Reported Of Milkman's Syndrome

➤ THE TWENTIETH case of a rare disease called Milkman's syndrome is reported by Dr. Louis Edeiken and Dr. Norman G. Schneeberg, of Philadelphia, (*Journal, American Medical Association*, July 24).

In spite of its name, the disease has nothing to do with dairies. Broken bones, not bottles, are the chief feature. The name comes from Dr. L. A. Milkman of Scranton, Pa., who first described it in 1930.

Patients with this strange ailment suffer pain and weakness of the legs, difficulty in getting up when they have been sitting or lying, and develop a peculiar waddling gait. Eventually they are unable to walk at all. X-ray pictures show many transparent bands or zones in the bones in various parts of the skeleton. Often these are symmetrically located. They are generally considered to be fractures of the bones.

No definite cause for the condition has been discovered as yet. In the case reported by the Philadelphia doctors, large daily doses of vitamin D and calcium lactate given for 25 weeks brought a weight gain of 19 pounds, banished the pain and enabled the patient to walk and earn her living, though she still has "her bizarre duck waddle gait." X-ray pictures showed excellent healing of all the apparent breaks in her bones and no signs of new breaks.

Science News Letter, July 31, 1943

ASTRONOMY

Summer Stars

Although Venus can still be seen early in the evening, it is drawing near the sun. Absence of planets permits the enjoyment of bright stars.

By JAMES STOKLEY

➤ NO PLANETS appear on our star maps during August, though Venus, which has been so bright in the western evening sky during recent months, can still easily be seen. However, it is drawing near to the sun, prior to disappearing from the evening skies at the end of the month. It is in the constellation of Leo, the lion, and sets before 11:00 p.m., war time, at the beginning of the month, the time for which the accompanying maps are prepared. At the middle of August the skies will have this same appearance an hour earlier. Venus is still far brighter than any other star or planet, and it is the first to appear in the west after sundown.

Venus, of course, is a planet, shining by reflected sunlight, while the stars are themselves luminous—each one a distant sun. The most brilliant star now visible is Vega, in Lyra, the lyre, which shines directly overhead at the hours for which the maps are drawn. Below, toward the southeast, is another first magnitude star, though not as bright as Vega. This is Altair, in Aquila, the eagle. Look for two fainter stars, one just above, the other just below, to help you recognize it. And below Lyra, to the east, is the northern cross, part of Cygnus, the swan. This is in the form of a cross on its side, with the first magnitude Deneb at the top, which is to the north.

Look for the W

In a prominent place in the northeast on August evenings is the W-shaped figure of Cassiopeia, the queen of Ethiopia, seated on her throne, according to the old pictures. In a corresponding position to the northwest is Ursa Major, the great bear, part of which is best known as the great dipper. The two stars in the bowl of the dipper are the pointers. Follow them upwards and to the right, and you come to the pole star, from which you can find your direction if you are lost at night, since it is always in the north.

Following the handle of the dipper, to the south, will enable you to find Arcturus, the first magnitude star in Bootes, the bear driver. It is a group in the west, and has something the shape of a kite, Arcturus forming part of the tail.

Another star of the first magnitude appears low in the south. It is in the figure of Scorpius, the scorpion, one of the few constellations which really look something like the thing they are named after. The curved row of stars which form the scorpion's tail curl around in a very scorpion-like manner. Antares, red in color, marks the heart.

You have to stay up late this month to see the other planets. About midnight Mars rises, in the constellation of Taurus, the bull. A little later it is followed by Saturn in the same constellation. Jupiter, brighter than either, is in Cancer, the crab, and appears about an hour before sunrise. Mercury during August is not in a favorable position to see.

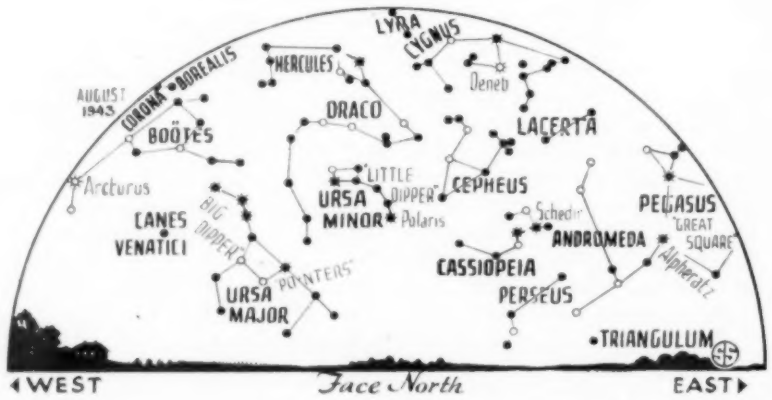
August this year brings two eclipses, neither visible from North America, however. The first, an annular eclipse of the sun, at the very beginning of the month, was discussed in this article for July. Two weeks after this, as the moon has moved around the earth from a position towards the sun to one opposite to it, there comes another eclipse, this time of the moon. On August 15 the moon will partially enter the shadow of the earth, thus producing a partial lunar eclipse, about 88% of the moon's diameter being shaded by the earth.

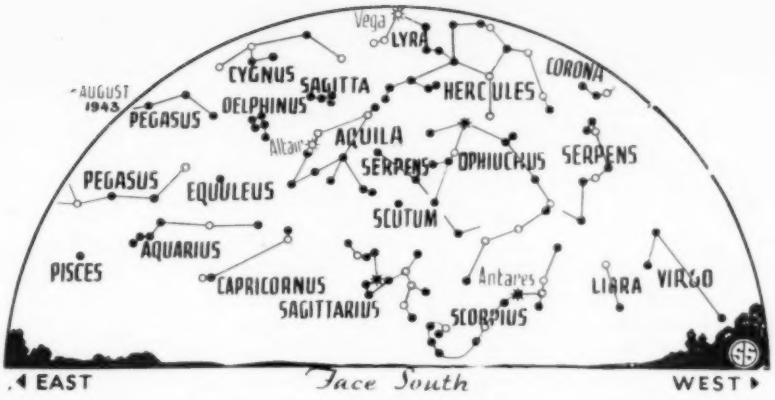
Since this eclipse, as it begins, will be visible over the western Pacific, Asia, Australia, New Zealand and, at the ending, in much of Asia and Australia, Europe and Africa, it will be seen by most of our fighting forces overseas. To them the moon will assume the peculiar red color which is characteristic of a lunar eclipse. This is the result of the bending of sunlight by the earth's atmosphere into the shadow. As it passes through the atmosphere blue light is scattered, and the light that penetrates is predominantly red.

On any clear dark night it is possible to see one or two shooting stars an hour, especially after midnight. These are not really stars, but are meteors, small bits of cosmic dust that enter the earth's atmosphere, and on account of friction with the atmosphere are burned up and vanish in a flash of light. The reason that we see more after midnight than before is because then we are in the part of the earth that meets the meteors head-on. Those before midnight have to catch up to us.

August Meteors

At certain times of year, there are meteor showers, when the earth enters a swarm of these bodies. One such shower occurs in August, about the twelfth, and this is called the Perseid shower. The reason for this is that they seem to radiate from the constellation of Perseus, the champion, which rises in the northeast about midnight. Actually, the meteors are moving through space in parallel paths, but these seem to converge in the distance, like the parallel lines of a long straight tunnel, or a pair





of railroad tracks. As a result, in the early morning of August 12, you may be able to see about a meteor a minute. Fortunately, this year the moon does not greatly interfere. It is then about eleven days old, between the first quarter and full, and sets about 1:30 a.m., so after that, the sky will be dark, and the meteors will shine without any serious competition.

Meteor observation is a task in which many amateurs help the professional. One thing that he wants to know is the number of meteors seen. A count by half hourly periods, i. e., from midnight to 12:30, 12:30 to 1:00 a.m., 1:00 to 1:30, etc., is helpful. One astronomer who is glad to receive such reports is Dr. Charles P. Olivier, of the University of Pennsylvania and president of the American Meteor Society, whose address is Flower Observatory, Upper Darby, Pa. In reporting such data, give the location from which you observed, and also a statement of the extent of cloudiness during the period you watched.

Celestial Time Table for August

Aug.	EWT	PHENOMENON
4	4:26 a.m.	Moon passes Venus.
8	11:26 p.m.	Moon in first quarter.
12	early a.m.	Meteors of Perseid shower.
15	4:00 a.m.	Moon nearest: distance 222,100 miles. Partial eclipse of moon (see text).
	3:34 p.m.	Full moon.
22	11:37 a.m.	Moon passes Mars.
	12:04 p.m.	Moon in last quarter.
24	2:29 p.m.	Moon passes Saturn.
28	3:00 a.m.	Moon farthest: Distance 252,300 miles.
	4:34 p.m.	Moon passes Jupiter.
29	1:00 a.m.	Mercury farthest east of sun.
30	3:59 p.m.	New moon.
31	2:00 a.m.	Moon passes Venus.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, July 31, 1943

PHYSICS

Need Uniform Standards

Latin-American countries are now being surveyed in effort to develop inter-American standards for the goods of everyday life.

➤ HOW the good neighbor policy is being extended to develop inter-American standards for the goods of everyday life was disclosed to the American Institute of Electrical Engineers meeting in Cleveland by Alberto Magno-Rodrigues of the American Standards Association.

The metric system of measurement, using centimeters and grams instead of inches and ounces, has been one of the biggest obstacles in adopting mutual standards between countries. Germans and other Europeans who use the metric system along with the Latin-Americans have long capitalized on this advantage.

Mass production, which makes standardization so valuable, now reduces the importance of the unit of measurement, Mr. Magno-Rodrigues explained, as compared with the specified size of the product. This makes the "go" and "not go" type of gauge popular over the inspector's scale and micrometer formerly used.

"The acceptance of the 25.4 ratio for the conversion of the inch to millimeters," the engineers were told, "is also helping to pave the way for better understanding between the groups of nations who use different systems of weights and measures."

An Inter-American Department of the American Standards Association has been formed which is now conducting a survey among South American standardization groups and business men.

This country's experience in formulating standards for the goods of commerce is being used by a committee of Chinese technical men now in this country. They are formulating standards with an eye on the postwar period as part of a study of the economic rehabilitation of China.

More active cooperation with Mexico is also developing since a Department of National Standards was formed out of the old Department of Weights and Measures.

In Peru a project is under way to establish an official standardizing body for the first time. Chile expects to have a similar group in the near future, either sponsored by the engineers or under government support.

Science News Letter, July 31, 1943

RESOURCES

Stove Shortage May Be Eased By Ceramic Heater

➤ SHORTAGE of heating stoves, developing due to lack of metals, may be eased by ceramic heaters designed at Ohio State University under the supervision of Prof. George A. Bole of the Engineering Experiment Station.

Successful stoves require careful blending of the raw clays, Prof. Bole explains, and more than one type of mixture is needed to make a completed stove.

Designs have already been developed to the point where manufacturers can take over, as a result of the research project initiated at the suggestion of the War Production Board.

Planned as a war measure, the new stoves made of non-strategic materials might also find a place in the post-war era, ceramic experts believe. Members of the Ohio Ceramic Industries Association met July 23 to discuss manufacture of the heaters.

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● RADIO

Saturday, Aug. 7, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Paul Weiss, zoologist of the University of Chicago, will discuss the possibility of establishing nerve banks.

NUTRITION

Vitamins for Workers

Some scientific support is given to the wholesale use of vitamin pills to aid war workers, but the weight of opinion urges reliance on food in good diet

➤ SHOULD WAR workers be fed vitamin pills? Leading scientists were asked that question by State Senator Thomas C. Desmond, of Newburgh, Chairman of the New York State Joint Legislative Committee on Nutrition. Replies reveal that the weight of opinion is against mass administration of vitamin capsules, that use of the synthetic concentrates is approved only under special conditions, and that a strong minority viewpoint contends that while vitamins may not be a complete answer to the need for better nutrition of employees, it is justifiable as a war-time measure.

Excerpts from typical responses received by Senator Desmond follow:

Prof. E. V. McCollum, Johns Hopkins University . . . In my opinion it is a much wiser policy to consistently educate the public in the use of proper combinations of our common natural, wholesome foods so as to make diets which are complete rather than rely upon synthetic vitamins. The promotion of synthetic vitamins is on a very low level at the present, a little, if any, above the old patent medicine days.

Dr. F. G. Boudreau, Chairman, Committee on Nutrition in Industry, National Research Council . . . In the last analysis good nutrition must be built upon a foundation of an optimum diet of natural foodstuffs. It is impossible to insure an optimum intake of all the essential food factors through the use of any of the poly-vitamin preparations now on the market. Where cooking and refrigeration facilities are inadequate, transportation poor and living conditions unsatisfactory, conditions exist in which vitamin concentrates and synthetic vitamins might be indicated. Vitamin concentrates may also be indicated where there is a high prevalence of nutritional deficiency diseases, determined through a survey conducted by a qualified physician. However, it must be recognized that synthetic vitamins and vitamin concentrates are expedients that cannot form the basis for a sound nutrition program.

Dr. Howard W. Haggard, Director, Laboratory of Applied Physiology, Yale University . . . There was time for education before the war; there will be time after the war; and it can go on during the war. But at present, our attention is focused not upon normal, logical and rational conditions but upon the abnormal, illogical and irrational conditions of wartime. If the use of vitamin supplements were to increase production in American factories by one per cent, if they were to make even this small contribution to decrease in absenteeism, spoilage and feeling of fatigue after long hours, then, to my mind the procedure would be rational, wise and economical, no matter what the cost. Two studies in a large defense plant, when all experimental conditions were controlled as rigorously as the conditions of management permitted, showed that there was a moderate but definite improvement in production by men fed vitamins, a marked decrease in spoilage and accidents and a considerable decrease in absenteeism. We are definitely of the opinion that increasing the vitamin intake of the American worker would be highly beneficial in production for the war effort."

Dr. Otto A. Bessey, Public Health Research Institute of the City of New York Inc. . . . The correct answer depends on the particular plant, locality, etc. In general, the feeding problem should be met by an adequate wholesome food supply in plant cafeterias. However, at the present time there is apt to be some difficulty in obtaining the necessary equipment. Therefore, the use of synthetic vitamins on a voluntary basis may be a worthwhile activity in certain cases.

Dr. W. J. Dann, Duke University . . . It is not desirable to supply synthetic vitamins to workers at industrial plants because it tends to focus too much attention on vitamin content of the diet and may engender an attitude that provided a vitamin pill is taken one can be as careless as one likes about what other food is eaten. A great deal of recent work emphasizing necessity of such large intakes of vitamins has been more enthusiastic than critical. Our knowledge of all the vitamins required by man is still incomplete and of those known only a few can be supplied as synthetics. Above all, the experience gained in British industry through the last three years shows conclusively that an unprecedently high output can be maintained by attention to meals without use of synthetics. If vitamin supplements must be supplied, it is more economical to use by-products such as yeast and natural materials such as fruit juice which also supply other vitamins not at present being given as synthetics.

Dr. Wilbur A. Sawyer, Director, International Health Division, the Rockefeller Foundation . . . The crying need for better nutrition can be answered only with food. Giving synthetic vitamins is a stopgap procedure, of great value to some of the ill or depleted but having little or no value for the normal working individual needing better nutrition.

Dr. L. A. Maynard, Director, School of Nutrition, Cornell University . . . I do not favor such a program. It represents a very inadequate and incomplete nutrition program in terms of the needs of workers. It tends to over-emphasize the contribution to nutrition and health which can be made by a few vitamins and to cause management and workers to give less attention to the many other essential components of an adequate diet, with a possible detrimental effect in terms of nutrition as a whole. There may be a place for supplementary vitamin feeding in special situations in industry, but not as a general program and not with any hope that it can be a suitable substitute for a program based upon a better diet of natural foods.

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Dr. Walter H. Eddy, professor emeritus, physiological chemistry, Teacher's College, Columbia University . . . I am definitely in favor of supplying war workers with multiple vitamin and mineral preparations for the following reasons. I have seen the use of such supplements accomplish quick results in a number of plants and know the procedure is effective. As an expediency measure, I am strongly in favor of using what we have available to accomplish our immediate needs and such material is available in the multiple vitamin and mineral offerings of many of the reliable drug firms today. Extensive surveys have shown that a large part of the people are not selecting foods so as to secure all the necessary vitamins and minerals.

Some Already Furnish Them

Senator Desmond said that Trojan Powder Co., Atlas Powder Co., Remington Arms Inc., and other munition plants are furnishing their workers with 100 m.g. of vitamin C free to help prevent powder poisoning. "Some of the companies," he declared, "are adding vitamins of the B complex."

"The number of vitamins distributed by war plants to employees is certainly amazing. One company alone, the North American Aviation Inc., Inglewood, Cal., furnishes their workers with 1,000 tablets every three months. Some concerns sell the pills to their workers at cost price, others give them free. Pills now being used in industry cost from ¾c to 5c depending on quantity and content.

"The trend toward vitamin feeding of workers is significant for one main fact: Management today is eager to improve the nutritional status of its employees. In this fact lies one of the most encouraging developments for achievement of better health for our millions of workers."

Science News Letter, July 31, 1943

CHEMISTRY

Waxing Glass Filaments Makes Firmer Thread

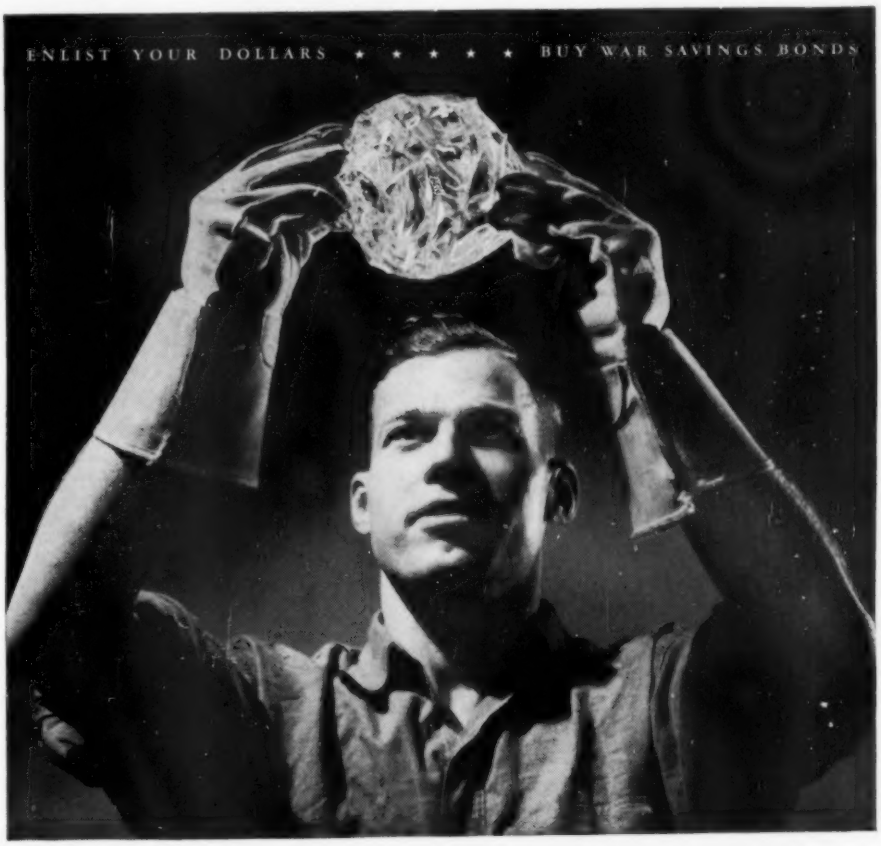
➤ GLASS THREADS, and glass fabrics woven from it, will be firmer, smoother, less likely to fray and ravel, through the application of a process on which U. S. patent 2,323,684 has just been granted to Allen L. Simison of Newark, Ohio. Essentially, it consists in coating each fine filament, as it is drawn out, with wax, and then spinning the filaments together into thread or yarn before the wax has time to harden.

The filaments are either drawn individually from the bath of molten glass, or are produced by directing an air blast at a slender stream of the melted substance, literally blowing it to slivers. In either case, the individual filaments are passed over a roller carrying a layer of softened wax of relatively high melting point (150 to 170 degrees Fahrenheit), after which they are gathered and twisted into a single strand which is packaged or wound as fast as it is produced.

The inventor claims that his wax-coating process is very effective in reducing the tendency of glass yarns to bristle with innumerable microscopic loose ends, and to split and fray readily. He states further that wax coatings are superior to those requiring the use of solvents as well as less costly, and that if desired the wax can be eliminated after processing, to leave the final fabric wholly fire- and chemical-proof.

Rights in Mr. Simison's patent are assigned to the Owens-Corning Fiberglas Corporation.

Science News Letter, July 31, 1943



This is an "Optical" War

Pete Miller, glass inspector, is pleased with that chunk of precious optical glass. He knows this is an optical war. He knows that accurate gunfire depends upon optical glass . . . flawless and crystal-clear.

But Pete Miller is not thinking of his skill as a glassmaker at Bausch & Lomb. In that glass he sees his friends at gunfire-control stations on battle cruisers, in the turrets of tanks roaring down on an enemy position, or making aerial photographs behind enemy lines. And always he sees them peering into the sights of a Bausch & Lomb optical instrument.

This glass is but one of dozens of types of Bausch & Lomb glass, made to meet exacting specifications for the optical systems of binoculars, range finders, microscopes, refractometers, metallographic and spectrographic equipment and scores of other products.

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• New Machines And Gadgets •

❁ *INTRICATELY SHAPED objects are quickly measured and compared by a new instrument. It is expected to prove useful for inspecting parts made by mass production which are not easily checked by ordinary gauges.*

Science News Letter, July 31, 1943

❁ *PILOTS TRAINING for blind flying now use a one-man blackout system. Transparent green plastic covers the cockpit windows, cutting out half the light spectrum; red colored goggles worn by the student cuts off the remainder of the light, forcing him to fly blind. The instructor, who does not wear the goggles has an unimpaired view of the student, the instruments, and outside the plane. It is said to produce safer, more effective training.*

Science News Letter, July 31, 1943

❁ *FIBER INSULATING boards can now be used as a base for ordinary interior wall finishes, including papering, without the use of paneled effects. This has been accomplished by substituting invisible flexible fasteners for conventional nailing. The "floating" effect obtained permits the entire wall or ceiling to expand and contract as a single unit with changes in humidity.*

Science News Letter, July 31, 1943

❁ *SMALL BOATS can be prevented from going aground by a device just patented. When in shoal or uncharted waters an arm is lowered to engage the sea bed or a dangerous projection. Hydraulically operated, the device gives warning in sufficient time to prevent grounding.*

Science News Letter, July 31, 1943

❁ *MANY ZIPPERS on the outdoor casualty suit shown in the picture permit the military surgeon to operate while the patient remains protected and warm.*

The weatherproof outer fabric is thickly insulated with quilted kapok. Developed by Canadians, this suit has already seen service in North Africa for such uses as transporting emergency surgical cases by plane and for protecting the wounded from cold.

Science News Letter, July 31, 1943

❁ *RAYON PARACHUTES are being used to float fragmentation bombs to earth in European operations. The parachutes are used because bombs might reach the ground and explode so quickly that the low-flying bombers could not get out of range.*

Science News Letter, July 31, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 167.*

ASTRONOMY

Matter in Space Interferes With View of the Milky Way

➤ DARK, obscuring matter in space interferes with our view of the Milky Way in the region of the constellation of Cepheus. Although on a clear evening we may believe we have a good view of the stars, no part of the Milky Way studied by Dr. A. Marguerite Risley of Randolph-Macon Woman's College and Harvard Observatory was entirely free of absorbing material.

Just as the light, fleecy clouds and the dark thunder clouds in our atmosphere keep us from seeing the heavens clearly, so dark matter many light years out in space veils the true brilliance of the stars. Dark lanes and flares are characteristic of Cepheus north of the galactic plane. In some places dark nebulae are visible, while in others, although there is no obvious obscuration, the stars are found to be shining through a thin veil of dark material.

A total of 750 square degrees, three-fourths of the area between 20 hours, 30 minutes, and 0 hours in right ascension, and plus 45 degrees to plus 75 degrees in declination, were studied. Miss Risley reports (*Astrophysical Journal,* May), that not a single part of this field could be considered unobscured.

The survey points out, however, several comparatively clear regions where the study of the colors of the stars of known spectral type should let us know the effectiveness of the haze, and enable us to get a better idea of the star density in the direction of Cepheus.

Science News Letter, July 31, 1943

Washington, D. C., *physicians* in general practice have an average of 115 patients a week, 70% of whom are office patients.

BOOKS

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SOIL SCIENCE

NATURE RAMBLINGS

by Frank Thone

Gifts of Vulcan

➤ VOLCANOES have long been regarded with such dread, as monsters of immeasurably violent destruction, that it comes as a surprise to many persons when they learn of their highly beneficent activities. It has become pretty well known that the richest lands in the temperate zones are found where a million years of glaciers plowed and pulverized and mixed the soil. We are used to fertility as a gift of ice; to find it also as a gift of fire catches us unprepared.

Those who know soil science are unanimous in agreeing that volcanic soils are among the richest in the world. They are so because volcanoes, like major ice sheets, act as tremendous subsoil plows, bringing up buried treasures of mineral elements needed by plants from deeper levels and putting them where roots can get at them.

Of course, where an eruption takes the form of a lava flow that cools into a sheet of solid rock, this fertility does not become available until weathering has crumbled its surface into soil, and that may take tens of thousands of years. However, a lava flow is usually quite limited in extent, as compared with the area over which a layer of volcanic ash falls, from the noisier, more explosive type of eruption.

And it is in this gray ash that the great gifts of Vulcan are delivered. The ash is usually small-grained and porous, from the explosive action of steam and other gases, so that it forms a light, easily worked soil, with large internal surfaces making the nutrient minerals readily available through the solvent action of seeping water and searching roots.

Travelers have often exclaimed at the hardiness, even the foolhardiness, of Italian peasants in moving right back onto the slopes of Vesuvius and setting out new vineyards right after an eruption had smothered their old ones. But these small farmers know what they are about. Vesuv' may have ruined their old farms, but he has given them better new ones in exchange.

The same is true elsewhere in the world. Some of the finest of Europe's western grapelands, in France and the Rhine-Moselle valleys, are on soils supplied by prehistoric volcanoes. Our enemies the Japanese would not be able to get even the kind of living they do off their mountain-slope farms if those mountains were not volcanoes. The same is true in the rich islands of Java and Sumatra, on the fertile uplands of Central America where premium coffee is raised, and in a dozen other regions famed for their fertility. The gifts of Vulcan are strange, but not niggardly.

Science News Letter, July 31, 1943

CHEMISTRY

Nylon to Be Used on Undergear of Warplanes

➤ NYLON for undergear of warplanes, 750,000 pounds of it that might have adorned feminine legs, is scheduled to reach tire makers by year's end. In announcing the first quantity shipment of nylon yarn, du Pont officials revealed that increasing quantities will be tagged for strengthening airplane tires.

After testing at Wright field, the Army Air Forces' research base in Ohio, some planes equipped with nylons went on combat duty in the Pacific war zone.

Meanwhile, small amounts of yarn have been going to five rubber companies so they could set up manufacturing methods.

Nylon cord tires apparently banished the idea that bigger tires and the resulting redesign of landing gear would be necessary to lug the bigger cargoes and bomb loads demanded by the increased tempo of the aerial offensive.

Science News Letter, July 31, 1943

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THE PRESIDENT OF THE CORPORATION

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First Glances at New Books

➤ A NECESSARY LANDMARK for every new scientific discipline is a "first book," in which pioneer steps are reviewed, techniques explained, and future possibilities and uses examined. This office is well performed for one of the newest developments in plant science by A HANDBOOK OF PLANT TISSUE CULTURE (*Jaques Cattell,* $3.75), whose title explains its scope. The author was one of the first to keep excised pieces of plant tissue alive and growing indefinitely, so that he is able to speak as one having authority. The clarity and orderliness that have characterized all of Dr. Philip R. White's experimental work are reflected in his presentation of his results, and in his survey of the whole field.

Science News Letter, July 31, 1943

➤ THEORIES on stuttering and methods of treating it followed by various American and European authorities are presented, in a form approved by the authorities concerned, in STUTTERING, by Eugene F. Hahn (*Stanford Univ. Press,* $2). The volume, with its description of Dr. Hahn's own methods of treating stuttering, should be useful to a large group of teachers, students and stutterers.

Science News Letter, July 31, 1943

➤ A DIFFERENT approach to the history of man's fight against disease is taken by one of America's leaders in that fight, Charles-Edward A. Winslow, in THE CONQUEST OF EPIDEMIC DISEASE (*Princeton Univ. Press,* $4). Prof. Winslow tells the story of the ideas that changed the battle lines against plague, cholera, smallpox and the rest from propitiation of the demons to vaccination, water purification and sanitary sewage disposal.

Science News Letter, July 31, 1943

➤ MINERALS have long played a part both in starting wars and bringing them to a successful conclusion. Their importance is thrown in bold relief by T. S. Lovering's MINERALS IN WORLD AFFAIRS (*Prentice-Hall,* $5.35). After a discussion of economics, history and geology, Mr. Lovering takes up the strategic industrial minerals one by one, supplementing his discussion with production tables and distribution maps.

Science News Letter, July 31, 1943

➤ GUAM, before the war, was to most of us just a stopping-place for trans-Pacific planes. Even before the present infestation of the island gave us such intense practical concern, entomologists were beginning to worry a bit about its possible role as a way-station for flying pests heading eastward from Asia, and a series of studies on the insects of the island was projected. The first group of these, covering nine families, has now been published by the *Bernice P. Bishop Museum* ($2.50), *Honolulu, Hawaii,* as INSECTS OF GUAM—I.

Science News Letter, July 31, 1943

➤ LIVING SCHOOLS OF THOUGHT are brought together within the covers of TWENTIETH CENTURY PHILOSOPHY, edited by Dagobert D. Runes (*Philosophical Library,* $5). Over a dozen ways of looking at life and man are given informative explanation, as for instance, Kantianism, dialectical materialism, American realism, etc. Then there are chapters on ethics, aesthetics, law, history, science, life, etc. This is serious reading for those who wish to know what makes philosophers philosophical.

Science News Letter, July 31, 1943

➤ CHUCKLES over "schœnste Langwitsch" errors in pronunciation and syntax come from no one more readily than the naturalized German who has learned his English well; yet even he may have lingering peculiarities that make others smile. For him especially has John Whyte prepared his helpful book, AMERICAN WORDS AND WAYS (*Viking,* $2.50). Nevertheless, there is a great deal in it that can be read with profit by Schmidts who became Smiths in William Penn's town—yes, and by Smiths of Jamestown, too.

Science News Letter, July 31, 1943

➤ UNDERSTANDING of South American nations must include the past, even the remote past, if it is to be really solidly established. For this, as well as for its strictly technical value, ARCHAEOLOGICAL STUDIES IN PERU, 1941-1942, by William Duncan Strong, Gordon R. Willey and John M. Corbett, is of general interest and value. (*Columbia Univ. Press,* $2.75).

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• Just Off the Press •

AIRBORNE INVASION: The Story of the Battle of Crete — John Hetherington — *Duell, Sloan & Pearce,* 178 p., illus., $2.50. An Australian war correspondent's record of a gallant defense.

THE ARABS: A Short History—Philip K. Hitti—*Princeton Univ. Press,* 224 p., illus., $2.

BIOLOGY, ECOLOGY, AND MORPHOGENESIS OF A PELAGIC FORAMINIFER—Earl H. Myers—*Stanford Univ. Press,* 30 p., IV plates, 75c, paper. Univ. Series, Biological Sciences, Vol. IX, No. 1.

THE CONQUEST OF EPIDEMIC DISEASE: A Chapter in the History of Ideas—Charles-Edward Amory Winslow — *Princeton Univ. Press,* 411 p., $4.50.

THE FEEDING APPARATUS OF BITING AND DISEASE-CARRYING FLIES: A Wartime Contribution to Medical Entomology—R. E. Snodgrass—*Smithsonian Institution* —51 p., illus., 30c. Smithsonian Miscellaneous Collections, Vol. 104, No. 1.

I TOOK A WAR JOB—Josephine von Miklos—*Simon and Schuster,* 223 p., $2.

LABORATORY EXPLORATIONS IN GENERAL ZOOLOGY—Karl A. Stiles and Bert H. Bailey—*Macmillan,* 304 p., $2.50, paper.

PRIMER OF CELESTIAL NAVIGATION—John Favill—*Cornell Maritime Press,* 263 p., illus., $2. 2d ed. rev. and enl.

STUTTERING: Significant Theories and Therapies—Eugene F. Hahn—*Stanford Univ. Press,* 177 p., $2.

THOMAS JEFFERSON—*The American Philosophical Soc.*—289 p., illus., $1, paper. Proceedings, Vol. 87, No. 3. Papers read before the Society in celebration of the Bicentennial of Thomas Jefferson.

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